What is claimed is:

1.   A distributed process control system for the programmable control of process devices to operate in cooperation to perform a predetermined process wherein each process device is capable of independent operation and of performing one or more related operations and wherein a process is a sequence of process steps wherein each step is defined by one or more operations of one or more of the process devices, comprising:

in association with each process device;

a device controller for controlling operation of the associated process device, each device controller including a process step memory for a storing a corresponding device process, wherein

each device process includes one or more device steps wherein each device step corresponds to a process step and controls one or more corresponding operations of the associated process device; and

a master controller for generating step execute identifiers to the device controllers, wherein

the device controllers are responsive to the step execute identifiers for cooperatively performing corresponding device steps of the device processes.

2.   The distributed process control system of claim 1, wherein a device controller is responsive to a device response output of the associated process device indicating a state of operation of the associated process device for indicating the completion of a device step.

3.   The distributed process control system of claim 2, wherein the master controller is responsive to indications of the completion of the device steps of a process step by each of the process devices performing a process for generating a next step execute identifier to the device controllers.

4.   The distributed process control system of claim 1, wherein each device controller further includes:

a step controller responsive to a step execute identifier from the master controller for reading a corresponding device step from the process step memory; and

generating control outputs corresponding to the device step to the associated process device to direct the associated process device to perform the device step.

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5.   The distributed process control system of claim 1, wherein each device step includes:

at least one step command directing an operation to be performed by the associated process device; and

at least one control value indicating an operating state of the associated process device in performing the directed operation.

6.   The distributed process control system of claim 5, wherein a device controller further includes:

a device interface for translating the at least one step command and at least one control value of each device step of the associated device process into control outputs for controlling operation of the associated process device.

7.   The distributed process control system of claim 4, wherein a step controller is responsive to a device response output of the associated process device indicating a state of operation of the associated process device for indicating the completion of a device step.

8.   The distributed process control system of claim 1, wherein the master controller further includes:

at least one input device for generating control inputs representing operations of a process device in a device step; and

a command processor responsive to the input device control inputs for generating a device step of a device process for a process device; and

providing the device step to the device controller of the process device for storage in the device controller process step memory.

9.   The distributed process control system of claim 4, wherein

a device controller further includes:

an input device for generating control inputs representing operations of the process device in a device step, wherein

the step controller of the device controller is responsive to the input device control inputs for generating a device step of a device process for the associated process device and indicating completion of the generation of the device step to the master controller;

the master controller is responsive to an indication of the completion of the generation of a device step from the device controller for generating a process step write identifier to the device controllers; and

the step controllers of one or more device controllers are responsive to each process step write identifier from the master controller for storing a corresponding device step representing a state of operation of the associated process device in the device controller process step memory of the associated process device.

10. The distributed process control system of claim 1, wherein a step execute identifier further includes one or more process controller identifiers identifying the process devices that are to execute a process step identified by a step execute identifier.

11. A method for distributed programmable control of process devices to operate in cooperation to perform a predetermined process wherein each process device is capable of independent operation and of performing one or more related operations and wherein a process is a sequence of process steps wherein each step is defined by one or more operations of one or more of the process devices, comprising the steps of:

storing a device process in each process device, wherein

each device process controls the operations of the associated process device and includes one or more device steps wherein each device step corresponds to a process step and controls one or more corresponding operations of the associated process device; and

in a master controller, generating step execute identifiers to the device controllers, wherein

the device controllers are responsive to the step execute identifiers for cooperatively performing corresponding device steps of the device processes.

12. The method for distributed programmable control of process devices of claim 11, further comprising the step of:

generating in a process device and providing to the master controller an indication of the completion of a device step by the process device.

13. The method for distributed programmable control of process devices of claim 12, further comprising the step of:

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in the master controller and responsive to indications of the completion of the device step of a process step by each of the process devices performing a process, generating a next step execute identifier to the process devices.

14. The method for distributed programmable control of process devices of claim 11, further comprising the steps of:

in each process device and responsive to a step execute identifier from the master controller;

for reading a corresponding device step of the device process; and

generating control outputs corresponding to the device step to the process device to direct the associated process device to perform the device step.

15. The method for distributed programmable control of process devices of claim 11, wherein each device step includes:

at least one step command directing an operation to be performed by the associated process device; and

at least one control value indicating an operating state of the associated process device in performing the directed operation.

16. The method for distributed programmable control of process devices of claim 15, further comprising the step of:

translating the at least one step command and at least one control value of each device step of the associated device process into control outputs for controlling operation of the associated process device.

17. The method for distributed programmable control of process devices of claim 14, wherein a process device is responsive to a state of operation of the process device for indicating the completion of a device step by the process device.

18. The method for distributed programmable control of process devices of claim 11, further including the steps of:

in the master controller providing control inputs representing operations of a process device in a device step;

generating from the control inputs a device step of a device process for the process device; and

providing the device step to the process device as a device step of a device process of the process device.

19. The method for distributed programmable control of process devices of claim 14, further including the steps of:

in a process device, providing control inputs representing operations of the process device in a device step, wherein

generating a device step of a device process for the process device;

indicating completion of the generation of the device step to the master controller;

in the master controller and in response to an indication of the completion of the generation of a device step;

generating a process step write identifier to one or more process devices;

in the one or more process devices and in response to each process step write identifier from the master controller;

storing a corresponding device step of a device process of the associated process device.

20. The method for distributed programmable control of process devices of claim 11, wherein a step execute identifier further include one or more process device identifiers identifying the process devices that are to execute a process step identified by a step execute identifier.